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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,571	08/27/2003	Christopher Oriakhi	200300745-1	8233

22879 7590 04/06/2007
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FORT COLLINS, CO 80527-2400

EXAMINER

BALDWIN, GORDON

ART UNIT	PAPER NUMBER
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1775

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/650,571	ORIAKHI ET AL.	
	Examiner	Art Unit	
	Gordon R. Baldwin	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claim 24, now combined into claim 20 is withdrawn in view of the newly discovered material in reference(s) Sherwood (U.S. Pub. No. 2003/0114936). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Sherwood (U.S. Pub. No. 2003/0114936).

Consider claims 20-23 and 25, Sherwood teaches solid three dimensional structures (abstract) that can be formed by a three-dimensional ink-jet process where the particles maybe made of one or more ceramic or other inorganic substances such as hydroxyapatite and other calcium phosphates(para.136), in addition to the particles also being polymers. (Para. 73) Sherwood also teaches the use of a binder, specifically poly acrylic acid (PAA), which is capable of binding powder particles together and to other solid regions, which can be contained in an aqueous solution. (Para. 84) Additionally, it is taught that it is also possible, in the case where powder particles are polymers, to use a liquid binder which is itself a solvent for the solid, which will effect partial fusion of the particles to each other by partial dissolution of particles

followed by resolidification (hardening). In this instance, chloroform is used as the aqueous liquid (Para. 84)

Sherwood also teaches in paragraph 118 that, the carrier liquid of the suspension, and the binder substance or substances for the three dimension printing process (if binding is achieved by a binder substance as opposed to dissolution/resolidification), may be chosen so that the binder substance or substances are not excessively soluble in the slurry carrier liquid. This assures that deposition of suspension for subsequent layers may be performed without appreciably affecting the binding of already-printed layers. For example, the binder substance may be polyacrylic acid and the suspension carrier liquid may be isopropanol or water. (the combination of these is considered to be a low molecular weight polymer solvated)

As for the composition having surface pores that are no larger than 10 microns on average, Sherwood teaches that the surface of the article can have a set of surface pores that are less than 10 microns in size. (Para. 160) Therefore, Sherwood is considered to teach the ability to have of a ink-jettable aqueous liquid with surface pores no larger than 10 microns on average.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlow (U.S. Pub. No. 20010005797) and further in view of Sherwood (U.S. Pub. No. 2003/0114936).

Consider claims 20-23 and 25, Barlow teaches the making of three-dimensional geometric shapes by fusing layers of calcium phosphate mixed with polymer binders. (abstract and claim 25) The structure is formed by using a binder coated calcium phosphate powders, whereby dissolving the polymer (considered to include methyl methacrylate (Para. 79)) in a suitable organic solvent (aqueous liquid) (considered to include water (Para. 77), which is also considered to give a low molecular weight polymer) and then depositing the solution on the surface of the particulate, then evaporating the solvent (hardening). (Para. 68)

The calcium phosphate is considered to include hydroxyapatite. (Para. 66) Additionally, the structure is considered to retain its form upon drying because Barlow states that the process of fabrication of these bone geometries is complex and that that process allows an accurate copy of the complex bone structure, which would not be possible if the composition did not retain its size and form upon drying. (Para. 75)

However, Barlow teaches an average pore size down to 50 microns, but Sherwood, who teaches solid three-dimensional structures (abstract) that can be formed by a three-dimensional ink-jet process where the particles maybe made of one or more ceramic or other inorganic substances such as hydroxyapatite and other calcium phosphates (Para.136), in addition to the particles also being polymers. (Para. 73) Sherwood also teaches the use of a binder, specifically poly acrylic acid (PAA),

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which is capable of binding powder particles together and to other solid regions, which can be contained in an aqueous solution. (Para. 84) Additionally, Sherwood teaches the ability to teach a surface porosity of less than 10 microns. (Para. 160) It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine the making of the three-dimensional shapes of Barlow with the three-dimensional shapes with the smaller porosity of Sherwood to assisting in the prevention of delamination in the transition region. (Sherwood, abstract)

Allowable Subject Matter

The material indicated as allowable subject matter, previously claim 24, which is now integrated in to claim 20, is not considered to be allowable subject matter, due to the Sherwood (U.S. Pub. No. 2003/0114936) reference.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon R. Baldwin whose telephone number is (571)272-5166. The examiner can normally be reached on M-F 7:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GRB


JENNIFER MCNEIL
SUPERVISORY PATENT EXAMINER
4/2/11